ANNEX O

ATTACK
(CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND EXPLOSIVE)

I. TYPE OF HAZARD

Attack (Nuclear, Conventional, Chemical, and Biological)

II. DESCRIPTION OF HAZARD

Of all the possible disasters and hazards we can imagine, a strategic nuclear, biological, or chemical attack could be the most devastating and far-reaching in consequences. The use of these weapons against the United States in unlikely. Unfortunately, however, as long as such weapons exist, there is always a chance that they could be used. The potential for traditional war-related attacks, using conventional weapons, is a scenario that is more likely to occur, based on currently available information.

Although the threat of all-out nuclear war has been significantly reduced with the dissolution of the former Soviet Union, several scenarios still exist that might subject a jurisdiction to widespread radioactive contamination or high-levels of radiation exposure. When Phase II of the START II Treaty (passed by the U.S. Senate in 1996 and ratified by the Russian Duma in April, 2000), is complete, it will allow its signatories, Russia and the United States, to maintain only between 3,000 – 3,500 actual (versus accountable in the START) strategic nuclear weapons each, a significant reduction from Cold War numbers. Five other nations have declared their nuclear capability and another 5 are suspected of having developed nuclear weapon technology, including trouble spots, North Korea and Iran. Additionally, 15 nation states have either had weapons, or programs to develop nuclear weapons, but have reportedly abandoned their efforts. Most have now signed the nuclear non-proliferation treaty. The Department of Defense estimates that as many as 26 nations may possess chemical agents or weapons, and an additional 12 may be seeking to develop them. The Central Intelligence Agency reports that at least 10 countries are believed to be conducting research on biological agents for weaponization.

While the threat of nuclear attack has diminished over the past several years, concerns over the use of chemical and biological warfare agents have increased. Recent events, such as the September 11, 2001, terrorist attacks on the World Trade Center buildings in New York City and the Pentagon in Washington D.C., along with the anthrax-related attacks in 2001, have increased awareness of the vulnerability of the U.S. to future attacks involving chemical or biological warfare agents. For more information on terrorist-related issues, see the Terrorism annex (Annex N) of this document.

III. HISTORICAL STATISTICS

In 960-1279 A.D. arsenical smoke (a form of chemical warfare) was used in battle during China's Sung Dynasty and in 1346-1347, Mongols catapulted corpses (biological warfare) contaminated with plague over the walls into Kaffa (in Crimea), forcing besieged Genoans to flee. During World War I (1915-1918), chemical and conventional weapons were used. The first poison gas, chlorine, was used by the Germans against Allied troops in 1915. The effects of the gas were devastating, causing severe choking attacks within seconds of exposure. The British subsequently retaliated with chlorine attacks of their own, although reportedly more British suffered than the German troops, because the gas blew back into their own trenches. Phosgene was later used in the war because it caused less severe coughing, resulting

in more of the agent being inhaled. Then, in September 1917, mustard gas was used in artillery shells by the Germans against the Russians. Mustard gas caused serious blisters, both internally and externally, several hours after exposure. In all, there were 1,240,853 gas-related casualties and 91,198 deaths from gas exposure during World War I.

During World War II (1941-1945), atomic (nuclear), chemical, and conventional weapons were used. Use of chemical weapons in World War II was not as prevalent as in World War I, and was primarily limited to the Japanese Imperial Army. During the war, the Japanese used various chemical-filled munitions, including artillery shells, aerial bombs, grenades, and mortars, against Chinese military forces and civilians. Chemical agents used included phosgene, mustard, lewisite, hydrogen cyanide, and diphenyl cyanarsine. The war was brought to an abrupt end in 1945, when the U.S. dropped two atomic bombs on Japan: one on Hiroshima that obliterated the entire city and killed approximately 66,000 people, and another on Nagasaki that destroyed about half the city and killed about 39,000 people.

During the Vietnam War (1964-1973), chemical and conventional weapons were used. Chemical weapons used during the Vietnam War are believed to have only involved tear agents used by the U.S., and possibly psychedelic agents, also by the U.S. Although not directly used as warfare agents, toxic herbicides such as Agent Orange were commonly used as defoliants by the U.S. Long-term exposure to Agent Orange, which contained the contaminant dioxin, was believed to cause illness and disease in humans.

In 1983, Iraq launched its first of 10 documented chemical attacks against Iran. The largest of these attacks was in February 1986, when mustard gas and the nerve agent tabun were used, impacting up to 10,000 Iranians. Although the exact number of chemical attacks implemented by Iraq during the war is unknown, the Iranian government estimates that more than 60,000 soldiers had been exposed to mustard gas and the nerve agents sarin and tabun by the time the war ended in 1988. Based on these data, the Iraqi chemical attacks during the Iran-Iraq war were the largest since World War I.

Although several isolated attacks involving biological agents have occurred over the last few decades, the most recent series of incidents in the U.S. that gained nationwide exposure occurred between early October and early December 2001, when five people died from anthrax infection, and at least 13 others contracted the disease in Washington, D.C.; New York City; Trenton, New Jersey; and Boca Raton, Florida. Anthrax spores were found in a number of government buildings and postal facilities in these and other areas. Most of the confirmed anthrax cases were tied to contaminated letters mailed to media personalities and U.S. Senators. Thousands of people were potentially exposed to the spores and took preventive antibiotics. Numerous mail facilities and government buildings were shut down for investigation and decontamination. In the wake of these incidents, federal, state, and local emergency response agencies across the United States responded to thousands of calls to investigate suspicious packages, unknown powders, and other suspected exposures. Fortunately, almost all of these incidents turned out to involve no actual biohazard.

IV. MEASURE OF PROBABILITY AND SEVERITY

Attacks against the United States as a whole, and against individual states or local entities, can be categorized as originating from either domestic or international sources. However, because the impacts on life and property would largely be the same regardless of the source of such an attack, similar preparedness, response, and recovery activities apply.

Biological and chemical weapons have often been used to terrorize an unprotected population, instead of actual use as weapons of war. However, the potential damage that can occur in the event of such an attack is huge, particularly to human health.

A single nuclear weapon detonation could cause massive destruction, and all aforementioned types of attacks could cause extensive casualties. An all-out nuclear attack could affect the entire population in the vicinity of the impacted area. Some areas would experience direct weapons effects: blast, heat, and initial nuclear radiation. Other areas would experience indirect weapons effects, primarily radioactive fallout. As long as world leaders maintain rational thinking, the probability of an attack by a antion-state remains low, but does not rule out attack by a terrorist group.

Secondary effects of these attacks, which could severely stress the country, include lack of adequate shelter, food, water, health and medical facilities and personnel, and mortuary services, disruption of communication systems, and power outages. Because of the potential devastation and significant secondary effects caused by this type of attack, the severity is rated high.

V. IMPACT OF THE HAZARD

The population is vulnerable to two separate categories of impacts associated with these types of attacks: direct and indirect impacts. For more information on these impacts, which are often connected to terrorist-related activities, see the Terrorism annex (Annex N) of this document.

A. Direct Effects

These are effects directly associated with detonation or use of the weapon.

1. Conventional Weapons

Direct effects of conventional weapons generally are related to injuries inflicted by penetration of ammunition rounds or shrapnel from exploding ordnance (mortars, etc.). Injuries from shock waves/blast overpressure near the targets may also occur, along with damage caused by fires produced from incendiary warheads, grenades, and other munitions. In addition, some injuries may occur as a result of flying or falling debris where the weapons are used. Heavy artillery use can also damage roadways and buildings, and disrupt utility services for lengthy periods of time.

2. Chemical and Biological Weapons

Direct effects of chemical weapons involve initial spread of agents and fragmentation of the weapons. Chemical agents are toxins used to produce neurological and pulmonary injuries or death. Biological agents are infectious microbes used to produce illness or death. They can be dispersed as aerosols or airborne particles directly onto a population, producing an immediate effect (a few seconds to a few minutes for chemical agents) or a delayed effect (several hours to several days for biological agents). Severity of injuries depends on the type and amount of the agent used and duration of exposure. Because some biological agents take time to grow and cause disease, an attack using this type of agent may go unnoticed for several days.

3. Nuclear Weapons

Direct effects include intense heat, blast energy, and high-intensity nuclear radiation. These effects generally will be limited to the immediate area of the detonation (up to 22 miles), depending on weapon size, altitude of burst, and atmospheric conditions.

4. Agroterrorism

The direct effect of agroterrorism is the intentional introduction of a contagious animal disease or fast spreading plant disease that affects livestock and food crops and disrupts the food supply chain. Agroterrorism could cause disease in livestock, crops, and in some cases (anthrax, or monkey pox, for example), humans. Diseases that can be transmitted to humans from animals are called zoonotic. It would not only require the agriculture industry to destroy livestock and food crops, but also affect the consumer confidence in the food supply resulting in tremendous economic damage for, potentially, an extended period. The food supply could be severely affected not only for the immediate area and the U.S., but the world market since the U.S. exports huge quantities of food to other nations. Recently the federal government has recognized the vulnerability of the agricultural/food supply industry and potential debilitation from a terrorist incident and acted to protect the resources through Presidential Decision Directives and encouraged complementary state and local actions.

5. Radiological Weapon

Direct effects of a radiological weapon are the same as a conventional high explosive, but with the added danger posed by exposure to radiological materials. A Radiological Dispersion Device (RDD) or "dirty bomb" will contaminate an area by spreading radiological dust and debris over a large area.

6. Explosive Weapon (large amount of high explosive)

The direct results of an explosive weapon are immense destruction caused by the blast and could result in multiple fatalities. Instances of these effects include Oklahoma City, Kobhar Towers, the marine barracks in Lebanon, and the African Embassy bombings.

B. Indirect Effects

These are effects not directly associated with the detonation and use of the weapon.

1. Conventional Weapons

Unexploded ordnance throughout a battle zone or explosion hazards to those in the area can persist after warfare has ended. Many conventional munitions also contain toxic compounds that can leach into surrounding soils and groundwater if left in place.

2. Chemical and Biological Weapons

Indirect effects are generally limited to downwind areas. They can be geographically widespread and vary in intensity—depending on weapon size, type of chemical or

biological agent, and wind patterns. The spread of these agents can contaminate food and water supplies, destroy livestock, and ravage crops.

3. Nuclear Weapons

When a nuclear weapon detonates, intense heat, blast and overpressure will cause severe injuries and fatalities in the surrounding area and radiation poisoning at more distant locations. A detonation near or on the ground draws up large quantities of earth and debris into a mushroom cloud. This material becomes radioactive, and the particles can be carried by wind hundreds of miles before they drop back to earth as "fallout." In an attack, many areas of the United States would probably escape fallout altogether or experience non-life-threatening levels of radiation. However, because weather that determines where fallout will land is so unpredictable, *no* locality in the United States is free from risk of receiving deadly radiation levels after a strategic attack. Less than lethal exposures will result in longer-term effects on health and contamination of food, water, and food production.

4. Agroterrorism

Agroterrorism's indirect effects are loss of breeding stock to replenish herds and flocks; loss of seed crops; and possibly loss of land use for a long period of time depending on the disease involved. Agroterrorism has a high probability of creating an economic disaster for states highly vested in food production, and potentially the nation.

5. Radiological Weapon

The indirect effect of a RDD is inability to use the contaminated area for a short-to long-time period, depending on the identity of the radioactive material. Because radioactive material from a RDD can penetrate wood, asphalt, concrete, and masonry (and radioactive dust and particles can enter the smallest crevices), decontamination will be extremely difficult or impossible.

6. Explosive Weapon (large amount of high explosive)

The indirect effect of an explosive weapon is the fear, terror, and lasting psychological damage done to survivors and other individuals.

VI. SYNOPSIS

Even though the START treaty has reduced the overall number of nuclear weapons, and many chemical weapons stockpiles being destroyed, we must continue to plan for, and be prepared for, this type of hazard. In many ways, while the risk of a nuclear exchange by the "super-powers" is greatly reduced, the potential risk of proliferation of WMD is greater than during the Cold War era.

While it may not be possible to prevent such an attack, steps can be taken to lessen the likelihood or the potential effects of an incident by implementing certain measures:

- Identifying and organizing resources

- Conducting a risk or threat assessment and estimating losses
- Identifying mitigation measures that will reduce the effects of the hazards and developing strategies to deal with the mitigation measures in order of priority
- Implementing the measures and evaluating the results (and keeping the plan up-to-date).

VII. MAPS OR OTHER ATTACHMENTS

No attachments or maps are available.

VIII. BIBLIOGRAPHY

Federal Emergency Management Agency (FEMA). 2003. U.S. Department of Homeland Security. Antiterrorism - Hazard Mitigation: It's Not Just for Natural Disasters Anymore. www.fema.gov/fima/antiterrorism. Accessed June 19, 2003.

FEMA. 2003. U.S. Department of Homeland Security. Planning - How-To Guide #7: Integrating Human-Caused Hazards Into Mitigation Planning. www.fema.gov/fima/planning_toc6.shtm. Accessed June 19, 2003.

FEMA. 2003. U.S. Department of Homeland Security. Hazards – Terrorism. www.fema.gov/hazards/terrorism. Accessed June 19, 2003.

FEMA. 2003. U.S. Department of Homeland Security. Hazards – Fact Sheet: Terrorism. www.fema.gov/hazards/terrorism/terrorf.shtm. Accessed June 19, 2003.

FEMA. 2003. U.S. Department of Homeland Security. Hazards – Backgrounder: Terrorism. www.fema.gov/hazards/terrorism/terror.shtm. Accessed June 19, 2003.

FEMA. 2003. U.S. Department of Homeland Security. Hazards – Fact Sheet: Radiological Accidents. www.fema.gov/hazards/nuclear/radiolof.shtm. Accessed June 19, 2003.

Federation of American Scientists (FAS). 2002. Intelligence Resource Program. National Security Directives (NSD) [Bush Administration, 1989-93]. www.fas.org/irp/offdocs/nsd/index.html. Accessed June 19, 2003.

FAS. 2002. Chemical Weapons Program – Japan. www.fas.org/nuke/guide/japan/cw. Accessed June 21, 2003.

FAS. 2002. Chemical Weapons – United States. www.fas.org/nuke/guide/usa/cbw/cw. Accessed June 22, 2003.

First World War.com Website. 2002. Weapons of War: Poison Gas. www.firstworldwar.com/weaponry/gas.htm. Accessed June 19, 2003.

Henry L. Stimson Center. 2002. Chemical Weapons: History and Controls. www.stimson.org/cbw. Accessed June 22, 2003.

RAND Science and Technology Policy Institute. 2001. Protecting Emergency Responders – Lessons Learned from Terrorist Attacks. Conference Proceedings. New York City. December 9-11.

The White House Website. 2003. The National Strategy for Homeland Security: Office of Homeland Security. www.whitehouse.gov/homeland/book/index.html. Accessed June 19, 2003.

United States Department of the Army. 2002. Army Regulation 380-86. Classification of Former Chemical Warfare, Chemical and Biological Defense, and Nuclear, Biological, Chemical Contamination Survivability Information. March 15, 2002.

United States Department of Defense, DefenseLINK website. 2003. Iraq and the Use of Chemical Weapons. www.defenselink.mil/news/Jan2003/n01232003_200301234. Accessed June 22, 2003.

University of Yale Law School. 2002. The Avalon Project. The Atomic Bombings of Hiroshima and Nagasaki. www.yale.edu/lawweb/avalon/abomb. Accessed June 22, 2003.